Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A hydrogen generator that generates hydrogen from a predetermined material, said hydrogen generator comprising:

a porous gaseous mixture layer through which a gaseous mixture including hydrogen passes;

a hydrogen separation layer that allows only the hydrogen to selectively permeate therethrough for separation of the hydrogen; and

a porous hydrogen extraction layer through which a hydrogen rich gas passes, the hydrogen rich gas mainly containing the hydrogen selectively permeating the hydrogen separation layer,

wherein the respective layers form a laminate structure, in which the hydrogen separation layer is interposed between the gaseous mixture layer and the hydrogen extraction layer.

2. (Original) A hydrogen generator in accordance with claim 1, wherein a cushioning member is interposed between the hydrogen separation layer and the adjoining porous layer.

3. (Original) A hydrogen generator in accordance with claim 1, wherein at least one of the hydrogen separation layer and the porous layer has a preventive mechanism that prevents the whole surface of the hydrogen separation layer from being in direct contact with the adjoining porous layer.

4. (Original) A hydrogen generator in accordance with claim 1, wherein the hydrogen separation layer comprises a plurality of small base members with a hydrogen

separating metal carried thereon and a support mechanism that supports the plurality of small base members in a two-dimensional arrangement.

5. (Original) A hydrogen generator in accordance with claim 4, wherein the support mechanism comprises a frame having recesses that accommodate the plurality of small base members therein.

6. (Original) A hydrogen generator in accordance with claim 1, said hydrogen generator further comprising a gas-tight casing member that covers over the whole laminate structure.

7. (Original) A hydrogen generator in accordance with claim 6, wherein the casing member comprises manifolds that respectively connect with a gas inlet into and a gas outlet from the gaseous mixture layer and with a gas inlet into and a gas outlet from the hydrogen extraction layer and allow the gas to be flown from outside to the laminate structure and flown out of the laminate structure to the outside.

8. (Original) A hydrogen generator in accordance with claim 7, wherein the manifold has a gas flow rate regulation mechanism that is arranged in a neighborhood of each of the gas inlets into the gaseous mixture layer and the hydrogen extraction layer to regulate the gas flow rate of the corresponding intake gas to a fixed value.

9. (Original) A hydrogen generator in accordance with claim 7, wherein the casing member comprises a gas leakage prevention mechanism that prevents leakage of any gas and is provided in at least part of a space between the gas inlet into the gaseous mixture layer and the gas inlet into the hydrogen extraction layer, a space between the gas inlet into the gaseous mixture layer and the gas outlet from the hydrogen extraction layer, a space between the gas outlet from the gaseous mixture layer and the gas inlet into the hydrogen extraction layer, and a space between the gas outlet from the gaseous mixture layer and the gas outlet from the hydrogen extraction layer.

10. (Original) A hydrogen generator in accordance with claim 9, wherein the gas leakage prevention mechanism comprises a flow path that allows a predetermined gas having a higher pressure than the gas pressures at the gas inlet and the gas outlet to flow toward the gas inlet and the gas outlet.

11. (Original) A hydrogen generator in accordance with claim 10, wherein the predetermined gas is steam.

12. (Currently Amended) A hydrogen generator in accordance with ~~claim 6~~claim 2, wherein a cushioning member is interposed between the casing member and the laminate structure.

13. (Original) A hydrogen generator in accordance with claim 1, wherein the porous layer comprises a regulation structure that is a denser portion formed on part of a side face of the porous layer and regulates a flow direction of the gas in the porous layer.

14. (Original) A hydrogen generator in accordance claim 1, said hydrogen generator further comprises sealing members to mutually seal the gas inlet into the gaseous mixture layer, the gas outlet from the gaseous mixture layer, the gas inlet into the hydrogen extraction layer, and the gas outlet from the hydrogen extraction layer against one another.

15. (Original) A hydrogen generator in accordance with claim 1, wherein the respective layers form the laminate structure in such a manner that the hydrogen extraction layers are located on both ends of the laminate structure.

16. (Original) A hydrogen generator in accordance with claim 1, wherein the gaseous mixture layer comprises a catalyst carried thereon to accelerate a predetermined chemical reaction according to the intake gas.

17. (Original) A hydrogen generator in accordance with claim 1, wherein the hydrogen separation layer comprises a porous support body having pores filled with a hydrogen separating metal.

18. (Original) A hydrogen generator in accordance with claim 1, said hydrogen generator further comprising a carbon monoxide concentration reduction layer that is located in a flow path of the hydrogen rich gas, which mainly contains the separated hydrogen, and has a specific catalyst carried thereon for accelerating a chemical reaction to lower concentration of carbon monoxide included in the hydrogen rich gas.

19. (Original) A hydrogen generator in accordance with claim 18, wherein the specific catalyst is a methanation catalyst of carbon monoxide.

20. (Original) A hydrogen generator in accordance with claim 19, wherein the specific catalyst contains one metal selected among the group consisting of nickel, ruthenium, and rhodium.

21. (Original) A hydrogen generator in accordance with claim 18, wherein the hydrogen separation layer comprises a hydrogen separation film integrally formed with a porous support body, and

the carbon monoxide concentration reduction layer is obtained by making the specific catalyst carried in one site of the porous support body where the hydrogen separation film is not formed.

22. (Original) A hydrogen generator in accordance with claim 18, wherein the carbon monoxide concentration reduction layer is integrally formed with the hydrogen extraction layer by making the specific catalyst carried in the hydrogen extraction layer.

23. (Original) A hydrogen generator that generates hydrogen from a predetermined material, said hydrogen generator comprising:

a porous gaseous mixture layer through which a gaseous mixture including hydrogen passes;

a hydrogen separation layer that allows only the hydrogen to selectively permeate therethrough for separation of the hydrogen; and

a hydrogen extraction layer through which a hydrogen rich gas passes, the hydrogen rich gas mainly containing the hydrogen selectively permeating the hydrogen separation layer,

wherein the respective layers form a laminate structure, in which a gas inlet into the gaseous mixture layer, a gas outlet from the gaseous mixture layer, a gas inlet into the hydrogen extraction layer, and a gas outlet from the hydrogen extraction layer are arranged in predetermined directions in preset side faces of the laminate structure, and the hydrogen separation layer is interposed between the gaseous mixture layer and the hydrogen extraction layer.

24. (Original) A hydrogen generator in accordance with claim 23, wherein the laminate structure includes a plurality of the gaseous mixture layers and a plurality of the hydrogen extraction layers, and

at least either of the plurality of gaseous mixture layers and the plurality of hydrogen extraction layers are connected to allow the corresponding gas to successively flow through at least part of the plurality of layers in series.

25. (Original) A hydrogen generator in accordance with claim 23, wherein at least either of the gaseous mixture layer and the hydrogen extraction layer in the laminate structure is designed to allow the corresponding gas to flow in a serpentine manner.

26. (Original) A hydrogen generator in accordance with claim 25, wherein the gas inlet into and the gas outlet from either of the gaseous mixture layer and the hydrogen extraction layer are located in one identical direction of the laminate structure.

27. (Original) A hydrogen generator in accordance with claim 23, wherein the hydrogen separation layer comprises a plurality of small base members with a hydrogen separating metal carried thereon and a support mechanism that supports the plurality of small base members in a two-dimensional arrangement.

28. (Original) A hydrogen generator in accordance with claim 27, wherein the support mechanism comprises a frame having recesses that accommodate the plurality of small base members therein.

29. (Original) A hydrogen generator in accordance with claim 23, said hydrogen generator further comprising a gas-tight casing member that covers over the whole laminate structure.

30. (Original) A hydrogen generator in accordance with claim 29, wherein the casing member comprises manifolds that respectively connect with a gas inlet into and a gas outlet from the gaseous mixture layer and with a gas inlet into and a gas outlet from the hydrogen extraction layer and allow the gas to be flown from outside to the laminate structure and flown out of the laminate structure to the outside.

31. (Original) A hydrogen generator in accordance with claim 30, wherein the manifold has a gas flow rate regulation mechanism that is arranged in a neighborhood of each of the gas inlets into the gaseous mixture layer and the hydrogen extraction layer to regulate the gas flow rate of the corresponding intake gas to a fixed value.

32. (Original) A hydrogen generator in accordance with claim 30, wherein the casing member comprises a gas leakage prevention mechanism that prevents leakage of any gas and is provided in at least part of a space between the gas inlet into the gaseous mixture layer and the gas inlet into the hydrogen extraction layer, a space between the gas inlet into the gaseous mixture layer and the gas outlet from the hydrogen extraction layer, a space between the gas outlet from the gaseous mixture layer and the gas inlet into the hydrogen extraction layer, and a space between the gas outlet from the gaseous mixture layer and the gas outlet from the hydrogen extraction layer.

33. (Original) A hydrogen generator in accordance with claim 32, wherein the gas leakage prevention mechanism comprises a flow path that allows a predetermined gas having

a higher pressure than the gas pressures at the gas inlet and the gas outlet to flow toward the gas inlet and the gas outlet.

34. (Original) A hydrogen generator in accordance with claim 33, wherein the predetermined gas is steam.

35. (Original) A hydrogen generator in accordance with claim 29, wherein a cushioning member is interposed between the casing member and the laminate structure.

36. (Original) A hydrogen generator in accordance with claim 23, wherein the porous layer comprises a regulation structure that is a denser portion formed on part of a side face of the porous layer and regulates a flow direction of the gas in the porous layer.

37. (Original) A hydrogen generator in accordance with claim 23, said hydrogen generator further comprises sealing members to mutually seal the gas inlet into the gaseous mixture layer, the gas outlet from the gaseous mixture layer, the gas inlet into the hydrogen extraction layer, and the gas outlet from the hydrogen extraction layer against one another.

38. (Original) A hydrogen generator in accordance with claims 23, wherein the respective layers form the laminate structure in such a manner that the hydrogen extraction layers are located on both ends of the laminate structure.

39. (Original) A hydrogen generator in accordance with claim 23, wherein the gaseous mixture layer comprises a catalyst carried thereon to accelerate a predetermined chemical reaction according to the intake gas.

40. (Original) A hydrogen generator in accordance with claim 23, wherein the hydrogen separation layer comprises a porous support body having pores filled with a hydrogen separating metal.

41. (Original) A hydrogen generator in accordance with claim 23, said hydrogen generator further comprising a carbon monoxide concentration reduction layer that is located in a flow path of the hydrogen rich gas, which mainly contains the separated hydrogen, and

has a specific catalyst carried thereon for accelerating a chemical reaction to lower concentration of carbon monoxide included in the hydrogen rich gas.

42. (Original) A hydrogen generator in accordance with claim 41, wherein the specific catalyst is a methanation catalyst of carbon monoxide.

43. (Original) A hydrogen generator in accordance with claim 42, wherein the specific catalyst contains one metal selected among the group consisting of nickel, ruthenium, and rhodium.

44. (Original) A hydrogen generator in accordance with claim 41, wherein the hydrogen separation layer comprises a hydrogen separation film integrally formed with a porous support body, and

the carbon monoxide concentration reduction layer is obtained by making the specific catalyst carried in one site of the porous support body where the hydrogen separation film is not formed.

45. (Original) A hydrogen generator in accordance with claim 41, wherein the carbon monoxide concentration reduction layer is integrally formed with the hydrogen extraction layer by making the specific catalyst carried in the hydrogen extraction layer.

46. (Original) A hydrogen generator that generates hydrogen from a predetermined material, said hydrogen generator comprising:

a gaseous mixture layer through which a gaseous mixture including hydrogen passes;

a hydrogen separation layer that allows only the hydrogen to selectively permeate therethrough for separation of the hydrogen; and

a hydrogen extraction layer through which a hydrogen rich gas passes, the hydrogen rich gas mainly containing the hydrogen selectively permeating the hydrogen separation layer,

wherein each of the gaseous mixture layer and the hydrogen extraction layer comprises a metal frame having a gas inlet and a gas outlet on side faces thereof, and the respective layers form a laminate structure by joining the metal frames with each other in such a manner that the hydrogen separation layer is interposed between the gaseous mixture layer and the hydrogen extraction layer.

47. (Original) A hydrogen generator in accordance with claim 46, wherein the metal frames respectively comprise flow path defining members that are connected to each other to form a gas flow path, which allows a gas to be flown in a laminating direction and to be flown into the gas inlet and flown out of the gas outlet when the metal frames are joined with each other in the laminate structure.

48. (Original) A hydrogen generator in accordance with claim 47, wherein the laminate structure comprises a plurality of the gaseous mixture layers and a plurality of the hydrogen extraction layers, and

the gas flow path is arranged to allow a predetermined gas to flow in parallel through at least either of the plurality of gaseous mixture layers and the plurality of hydrogen extraction layers.

49. (Original) A hydrogen generator in accordance with claim 47, wherein the laminate structure comprises a plurality of the gaseous mixture layers and a plurality of the hydrogen extraction layers, and

the flow path defining member comprises a gas flow cutoff element that is formed in at least part of the flow path defining member to cut off the gas flow in the laminating direction, the gas flow cutoff element functioning to allow a predetermined gas to flow in series through at least either of the plurality of gaseous mixture layers and the plurality of hydrogen extraction layers.

50. (Original) A hydrogen generator in accordance with claim 46, wherein the metal frame has a configuration of 4-fold symmetry about an axis in the laminating direction, and

the gas inlet and the gas outlet are located at opposite positions in a plane perpendicular to the laminating direction.

51. (Original) A hydrogen generator in accordance with claim 46, wherein the laminate structure comprises a flow path that allows a flow of a predetermined gas having a higher pressure than the gas pressures in the gaseous mixture layer and the hydrogen extraction layer as a gas leakage prevention mechanism that prevents leakage of the gas between the gaseous mixture layer and the hydrogen extraction layer.

52. (Original) A hydrogen generator in accordance with claim 51, wherein the predetermined gas is steam.